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AN  
INAUGURAL THESIS  
ON  
JAUNDICE;  
CONTAINING  
OBSERVATIONS ON THE LIVER,  
AND  
SOME OF ITS DISEASES.

SUBMITTED TO THE EXAMINATION  
OF THE  
REV<sup>d</sup>. JOHN EWING, S. T. P. PROVOST,  
THE TRUSTEES AND MEDICAL FACULTY  
OF THE UNIVERSITY OF PENNSYLVANIA;

ON THE 6<sup>TH</sup> DAY OF JUNE, 1799,  
FOR THE DEGREE OF DOCTOR OF MEDICINE,

BY  
JAMES NORCOM, OF N. CAROLINA,  
HONORARY MEMBER OF THE PHILADELPHIA  
MEDICAL AND CHEMICAL SOCIETIES.

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*Phæbe fave, novus templa tua ingreditur.*

TIBUL.

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TO  
CASPER WISTAR, M. D.  
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*UNIVERSITY OF PENNSYLVANIA.*

**T**HIS dissertation is respectfully inscribed, as  
a small tribute of gratitude and esteem, for the  
important and disinterested services, which he has  
been pleased to render his

Much obliged friend and

Very devoted servant,

JAMES NORCOM.

# INTRODUCTION.

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**A** PROBATIONARY thesis being necessary to obtain a degree in medicine; I have ventured in the subsequent pages to lay before the public a few hasty observations on the subject of jaundice—This I have done, not from a consciousness of the utility of such a practice, not with a view to divulge or promulgate any favourite hypothesis of my own, nor yet with an intention to abet, or oppose the asseverations of others; but in obedience only to that law, by which it is exacted.

I once indulged myself in the agreeable expectation, of instituting a series of experiments, on some indigenous vegetable production; but have to regret, that the want of talents, time, and opportunity, qualifications indispensable to the execution of such a task, has rendered it wholly impracticable.

In every inaugural essay, which hath come under my examination, it has been customary to quote the authority of different writers, and to specify by par-

ticular references, the work, or parts of the work, from which such quotations have been taken—In the following sheets, I shall not introduce such quotations or references at all, except, what I may have occasion to mention in the text or body of the composition, and hope to be excused, should I in any place be found adopting opinions which have not been generally acknowledged, without special reference to the authors of their existence. Of this pardon, I shall be the more confident, if gentlemen recollect, that the majority of theses are mere compilations, and that the more or less judicious his selection, the greater or less will be the merit of the author's performance.

In thus deviating, from a long established custom, I do not intend to deny my obligations to authors who have treated on the subject about to be considered—The facts upon which many of the following observations are founded, are contained in the writings of Morgagni, Bonetus, Schenkius, Monroe, Boerhaave and Hoffman—I am not sensible of having taken any thing for granted, which experiment and the common observations of mankind have not amply illustrated—Without prepossession in favour of any particular opinion, and with a predilection to the authority of none, I have read attentively the works of those, who have written professedly on my subject, and have been guided in my arrangement, by the dictates of my own understanding.

I am aware that I have to encounter the ordeal of public opinion, though totally unqualified for such a trial; and coming forward in a literary world under many disadvantages, more especially in a publication like the present, executed with so much precipitation and hurry, no one will expect to find me invulnerable by the shafts of criticism—I therefore submit it with the utmost diffidence, soliciting such allowances from an indulgent public, as its numerous inaccuracies so egregiously require.



## HISTORY OF THE DISEASE.

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THE disease which I have selected from the nosological catalogue, as the subject of enquiry on the present occasion, is one, which has been long known among medical practitioners, by the name of Jaundice. It is described in books of antient authority by a variety of appellations, such as *Morbus Acutus*, *Icterus*, *Aurigo*, *Icterus*, *Morbus Regius*, and many others equally arbitrary and uninteresting. It is a disease, which is probably coeval with some of the most antiquated of human maladies, and is common in all warm climates—Persons of every age, sex, and constitution, are alike subject to its invasion, it occurs ofteneft in the bilious temperament, or in those who are subject to hepatic and bowel complaints, and is said to appear principally in the seasons in which those complaints are most prevalent. Such as have once had the disease, are liable to frequent returns of it.

Jaundice consists in too great a quantity of the matter of bile in the blood, exhibiting a yellowness of different degrees of intensity, and more or less diffused, on the external surface of the body. It is brought on by causes, which prevent the excretion of bile, after it is separated from the blood; and possibly, by some inexplicable changes in the circulation, effected by causes to be hereafter enume-

rated. People in common circumstances, often go about with the disease upon them, without experiencing any great inconvenience, and transact the ordinary business of life, particularly, where no great muscular exertion, is required. The duration of Jaundice is extremely uncertain: in some it will disappear in a few days; in others it will continue for many months, nay even years, without producing any considerable constitutional injury.

### SYMPTOMS.

Antecedent to the appearance of Jaundice, the patient is often heard to complain, of pain sometimes acute, but oftener obtuse, in the right hypochondrium, or in the epigastric region just below the scrobiculus cordis, at a point corresponding to the entrance of the biliary and pancreatic ducts, into the duodenum. It is often preceded by nausea, sickness, anxiety, a disposition to faint, with signs of languor and universal debility, which frequently continue some time before the icteritious colour makes its appearance upon the external superficies of the body. But it not unfrequently happens that the accession of the disease is sudden, and without any premonitory symptom whatever. There is generally a sense of weight, and tension, about the hepatic region, with a pain, which is commonly referred to the stomach, and which is either continual and obtuse, or intermitting and very severe; lassitude of body, dejection of mind, drowsiness, disinclination to motion, and unrefreshing sleep, are its constant attendants. The tuniæ albuginæ of the eyes, are the parts where yellowness, generally, is first perceptible, after which, the nails, and at length the whole surface of the body, acquires an uncommonly yellow colour; this yellowness in some cases has been known to pervade every part of

the body, internal, as well as external, even the very bones and cartilages themselves, have been found deeply impregnated with bile.

The colour of the skin in Jaundice, corresponds exactly with that, which may be produced, by a mixture of bile with a certain proportion of water, giving a pale yellow shade, but now and then tending to that of a deep yellow, according as the bile is more or less diluted, with the watery part of the blood. The urine being saturated with biliary matter assumes a yellowish red, tinging a piece of paper, or linen, dipt in it, of a durable saffron colour. The saliva, which in a state of health is perfectly insipid, becomes sensibly bitter, which frequently gives the patient an idea, while eating, that his food is bitter.

These symptoms are often accompanied by thirst, want of appetite, great irritability of stomach, and frequent fits of vomiting; and if the disease continues two or three days, the patient becomes considerably emaciated.

Such as happen to be afflicted with this complaint, suffer exquisite torment, from flatulency, dyspepsia, heart-burn, hiccough, and acid eructations; twisting and rumbling of the bowels, with extreme pain. The fœces are pale, rough and irregular, and at last assume an ash or clay colour, nor have they their usual feculent odour. The bowels are for the most part constipated, and the excrements, when voided, have often an uncommonly putrid smell. During the whole course of the disease, more or less fever attends, with alternate chills and flushes, and sometimes a delirium with partial spasms, or universal convulsion. The fever is often very violent, but seldom comes on until many of the other symptoms have con-

tinued some time. The pulse is variable, generally quicker and stronger than natural; sometimes, however, it is preternaturally slow and hard.

As the disease advances, respiration becomes more and more difficult, with palpitations of the heart, uneasiness and anxiety about the præcordia.—The languor and lassitude go on increasing, with dullness and a degree of stupidity, sometimes bordering on fatuity, until the whole body is tinged of a yellow hue, which, in some few instances, has approached so near to black, as to have given rise to the ridiculous term, Black Jaundice.

Objects viewed by persons in Jaundice, sometimes appear indiscriminately of a yellow colour, except such as are blue, which, according to some authors, are often mistaken for green—An itching, and dryness of the skin, often tease the patient; while hemorrhages from the nose, gums and intestines, assist in aggrandizing the list of his distresses—a diarrhoea rarely attends, but when it does, although accompanied with profuse discharges by urine and perspiration, is commonly deemed a salutary symptom.

Obstructions and dropsy, finally come on; the patient falls into a state of extreme debility, and after some hours of intolerable pain, appears suddenly relieved, and sinks, as it were imperceptibly, from a state of celestial tranquility, into an everlasting slumber—The fatal termination is not always thus easy; the patient sometimes feels, in the last moments of departing life, the most excruciating misery—Very different, indeed, is the face of things, when the disease is about to end favourably—the patient, in this case, is not much reduced, but continues to go about, has fewer of the symptoms,

and those less violent, his spirits continue good, and his digestion not much impaired, until, by his own cautious management, by the uncontrolled exertions of nature, or by the interposition of proper medical aid, the disease is entirely subdued, and he restored to perfect health.

Before I proceed to the next division of my subject, it will not be amiss, to premise a few remarks, on the nature, secretion, and use, of the

### BILE.

The bile is a fluid of a greenish yellow colour, an intensely bitter taste, of an oleagenous viscosity, having a peculiar aromatic odour, a little more thick in its consistence than milk, and rather more viscid.

It has been called an animal soap, but I do not believe with sufficient accuracy; because, the analogy between them is by no means so extensive, as has been fancifully imagined—Chemists, to be sure, have obtained from it an oil, and an alkali, but admitting the formal existence of these two substances in the bile (which I very much doubt), it remains yet to prove, that they exist in such a state of combination, as to constitute a true soap.—The milk, we are taught by chemistry, is capable of affording a fixed alkali, and we are certain, that oil is present in it, in great abundance, yet, no one will pretend to say, that it is a soap, on that account; and we might with as much reason, and propriety, give the epithet to one, as the other.—The bile too has, in the hands of the dyer, succeeded in taking out stains and blotches, from clothes, but, rectified spirit and the fixed alkalies are, in such cases, equally successful—It is said to

have answered further, the purposes of the artist, as a medium of union, for oil and water, in the art of varnishing; and the physiologist has been content to suppose, that it might have some analogous operation, upon the oily, and aqueous parts of our aliment, in the *primæ viæ*; but it should be remembered, that there are other substances which will do the same thing, as animal glues, the yolk of an egg, vegetable gums, mucilages, &c. and with what propriety, or judgment, any of these substances could be called soaps, the intelligent reader will be at no loss to determine.

In order to obtain further information, on this subject, I made a few simple experiments; the results of which, with deference to the high authority of Fourcroy, Cadet, Chaptal, and others equal in celebrity, I will relate for the benefit of my readers—1<sup>st</sup>. The bile, unlike the substance called soap, is not miscible with oil, except by the affinity of an intermedium—2<sup>dly</sup>. No neutral salt is obtained by treating the bile with acids—3<sup>ly</sup>. That substance separated from bile by the addition of an acid is soluble in, and miscible with water—These facts, in my opinion, go very far in proving that the appellation of soap, as applied to the bile, is an unjust one; that such a conclusion will be warranted or confirmed, by future and more convincing experiments, I shall not attempt to assert.

The bile, from numberless experiments which have been instituted and performed on it, appears to be composed of a ferous or watery part,—a coagulable putrifiable matter, analogous to the coagulable lymph of the blood, and a subtile aromatic principle, in which, besides its peculiar odour, its colouring matter and bitterness are thought to reside—I shall not add to the many uninteresting disputes, which have been agitated about the origin and formation of its

constituent parts; and it would only be making an unnecessary digression to state the current opinions on the subject.

Subjected to the torture of fire, the bile yields an empyreumatic refinous oil, the mineral alkali, a small quantity of iron, and phosphorated lime—it is also said to contain a large quantity of carbonic acid or fixed air, united to the mineral alkali which is contained in it, and this has been found more especially the case, with those concretions, which are often derived from it; hence, a suspicion has arisen, that this latent air, might increase the attraction or cohesion of the other parts of the bile, and thus contribute to the formation of calculi: on the probability of this theory I am totally unprepared even to venture an opinion—The bile appears to be a gelatinous compound, intimately united in its parts, capable of coagulation by acids, and susceptible of greater fluidity by being combined with alkalies; its coagulability is diminished by putrefaction, and its coagulum is so closely blended with the other parts of it, that it cannot be obtained free from them, except by its own proper solvent.

From experiments, which appear to have been faithfully made, and candidly related, it is concluded, that the principle of bitterness in the bile (whatever it be) resists the effects of putrefaction; while the viscid coagulable matter, more readily putrefies than other substances.

The bile which is found in the gall-bladder, differs from the newly secreted bile, in being more viscid, yellow, and bitter: this does not arise so much from a difference of origin, nature, or secretion, as from confinement and stagnation in the gall-bladder, where by the absorption of its more attenuated and limpid parts, it undergoes this remark-

able change. The constituent principles of the cystic and hepatic bile are the same, and the only way in which they differ, is in the proportion of their component parts.

The apparatus of vessels, appropriated to the secretion of bile, is curious and interesting. The viscus which is principally concerned in this noble operation, is the liver, a gland of the conglomerate kind, of a dusky red colour, destined to refine and depurate the vital mass; while it is at the same time subservient, to one of the most wonderful and indispensable processes in the animal œconomy: viz. digestion.

The liver, the largest gland in the body, is situated in that part of the abdominal cavity, called by anatomists, the right hypochondrium, which it often completely fills; it frequently occupies a portion of the epigastric, and is sometimes of such size, as to extend a considerable distance into the left hypochondriac region; it is covered by a proper membrane of its own, and a common one from the peritoneum;—it is fixed in its place, with its convex surface corresponding to the concavity of the diaphragm, by ligaments, derived chiefly from the peritoneum, and attached to various parts of the abdominal parietes, called lateral, coronary, umbilical, suspensory, &c. The liver, in a natural and healthy state, is entirely vascular, composed of the ramifications of the vena portarum, hepatic veins, and hepatic artery, the secretory and excretory ducts, besides which, enter into its composition, in common with all other parts of the body, nerves, and lymphatic vessels.

The secretion of bile is very remarkable, for unlike the other secreted fluids of the body, it is not separated from entire arterial blood, but from that which is collected from the viscera of the abdomen, in one large vessel, known by

the name of *vena portarum*, a vein, performing in a great measure the office of an artery, which ramifies every where through the substance of the liver, and sends off the biliary fluid from its capillary or extreme branches, in a set of secretory vessels, called *pori biliarii*, which uniting in their course out of the liver, form larger and larger trunks, until they make up a vessel of considerable size, distinguished by the name of hepatic duct, through which and the *ductus communis choledochus*, the bile is perpetually distilling, into the duodenum, except by some spasmodic affection or morbid distension of that intestine, or some obstruction in the common duct, its admission is prevented; when, it passes in a retrograde direction, through the cystic duct into the gall-bladder, where it is called cystic, in contradistinction to the other, which has acquired the name of hepatic bile.

The gall-bladder is a small pyriform bag, which lies in a depression on the concave surface of the liver, at the anterior part, and right side of its great lobe, with its fundus or large extremity pointing downwards. It is composed of two principal coats, the internal of which is villous, like the villous coat of the intestines; the second is supposed to be muscular; it has also, a partial covering from the peritoneum; it terminates obliquely upwards and inwards, in a small twisted neck, continued into a membranous duct, called cystic, which joining with the hepatic, forms the *ductus communis choledochus*. This reservoir does not seem to exist as immediately necessary to the secretion of bile, nor as indispensable in the process of digestion, but as a receptacle, provided by nature, to contain any superfluous quantity of bile, that might accidentally be separated. This opinion is rendered probable, by dissections, which shew the cystic duct to have been completely obliterated, and the gall-

bladder full of concretions, when no disorder of the liver, or irregularity in the function of digestion, had been taken notice of before death. That bile, which is deposited in the gall-bladder, by its stagnation acquires such acrimony, as to excite a contraction of its muscular coat, which propels it into the duodenum, except by some mechanical power, as the distension of the stomach, vomiting, violent fits of coughing, &c. it be previously evacuated. Whether this discharge is accidental merely, or whether it answers any valuable purposes in the œconomy, physiologists are not agreed.

The secretion of bile is a subject enveloped in much obscurity; the use of it, however, is somewhat better understood—From the effects of an impeded or prevented secretion of bile on the constitution, it is supposed that the biliary secretion, is intended to obviate a putrefactive tendency of the blood—And when we consider, that nature uses venous blood for it, and that too, which is collected from parts where processes of a fermentative kind, are often going on; added to this, the tardy circulation of the blood, from which bile is derived; that whatever has a tendency to increase putrefaction out of the body, augments the secretion of bile; that in the highest grades of bilious fever, in which the tendency of the system to putrefaction is so great, a redundancy of bile so often occurs; and that the secretion is increased from starving in which symptoms of putrescence are so constantly observed; we cannot help believing, there is some foundation for this opinion—Whether this increased biliary secretion, be owing to some change produced in the blood, which facilitates its conversion into bile; or an effort of the system to resist the effects of causes, inducing putrefaction, is not clearly ascertained. But we uniformly find

it to attend the long continuance of hot weather, shewing itself during the prevalence of those fevers, which prevail in the summer and autumnal months—It is acknowledged by most writers, that when remittent fevers continue until the commencement of cold weather, they lose their malignity, and their bilious symptoms vanish—This remark seems to shew, that the redundancy of bile which appears in those fevers called bilious, is more the effect of a particular state of the blood in the hot season, than of the disease which it accompanies—And how often must it have happened to practitioners, to observe fevers of the remittent and intermittent type, in every season of the year, in which there occurred no one circumstance that would lead them to suspect a redundancy of bile; nor will they deny having seen, profuse and unnatural discharges of bile, with which little or no general fever appeared, as in cholera morbus, bilious diarrhoea, &c.—But to return.

The bile is a substance admirably adapted to the assimilation of the many heterogeneous compounds with which it meets in the first passages—The glutinous part of it, serves as a medium of union, for the aqueous and oily parts of our aliments—By its bitter and antiseptic qualities, it obviates or corrects their ascescent, and putrefactive tendency—And by its gentle stimulus, it imparts vigour to the intestines, keeps up their peristaltic action, and thus promotes and facilitates the expulsion of the fæces—That these are the effects of bile in the intestinal canal, is evinced, by what happens from an excess, or total privation of it.

### CAUSES.

Jaundice, most commonly arises from an obstruction to the passage of bile into the duodenum, existing

either in the hepatic duct, some of its branches, or in the ductus communis choledochus; in both cases, the liver becomes diseased from congestion, and the bile, if it continues to be secreted, is either taken up by the patulous mouths of the absorbents, or regurgitates directly through the branches of the hepatic veins—An impeded or depraved secretion of bile, I believe, seldom, if ever, gives rise to Jaundice—on the contrary, it is generally owing to an obstruction, to its excretion, after it has been duly and naturally secreted by the liver; by which means, it is admitted into the circulation, and communicates to the fluids secreted from the blood, its colour, bitterness, and other sensible qualities.

The bile, I said, might return into the circulation after its secretion in the liver, by absorption and regurgitation.

Under the head of absorption, I presume, little need be said: for it is universally allowed, that there exist numerous lymphatic vessels, in the liver, gall-bladder and biliary ducts, which, in a natural and sound state of the parts, only take away the pure watery part of the bile, and perhaps, a fluid which is continually exhaling into their cavities, to lubricate and defend them from its acrimony—But when the excretion is prohibited, either in consequence of the stimulus of distension, or from some quality in the bile, it is absorbed by the lymphatics, and unless its efflux into the intestines be speedily promoted, the whole volume of blood is impregnated with it.

A great deal has been said to prove, that a regurgitation of bile never takes place, and from the experiments and observations of doctor Monroe of Edinburgh, it would seem,

that it rarely does ; but that it sometimes happens, I am persuaded by the following reasons: 1. A common injection passes readily, and easily, from the hepatic duct into the hepatic veins, and vena cava. 2. Having proved the passage pervious, by injection, it is plain, that when the gall-bladder is much distended, and an insuperable obstruction exists in the ductus communis choledochus, the bile by the immense pressure to which it is subjected from the contraction of the diaphragm and abdominal muscles, in the act of vomiting, or during any other violent exertion of the body, will pass again through the secretory ducts, to the fountain from which it originally sprang—nor is there any difficulty in understanding the facility, with which this may happen; for, as the blood is continually moving forward in the vena portarum and hepatic veins, towards the heart, the resistance must be greater at the obstruction in the duct, than it can be at the veins where the biliary pores take their rise. And, lastly, how can we account, for the sudden relief which violent fits of vomiting give, when no calculus is voided, and no bile evacuated, but by recurring to the doctrine of regurgitation.

Inflammation, suppuration, and scirrhous tumors of the liver, have been ranked among the causes which produce Jaundice; but as there are upon record so many cases of inflamed, and obstructed liver, in which the disease has never appeared, it may be justly doubted whether such affections, exclusive of some irregularity or obstruction in the biliary ducts, are capable of producing it at all.

It would surely be of the first importance to know, whether this be really true. Here, then a question of primary magnitude, obtrudes itself upon our examination, does, or does not, the bile exist formally in the blood?

There certainly is no doubt, that the blood contains the materials necessary to the formation of bile ; but how, or in what manner, they exist in it ; is a question, for the solution of which, in my humble opinion, testimony is yet wanting. If it absolutely exist formed in the circulating mixture, and be perceptible to the senses in the blood, we have reason to admit, that affections of the liver, diminishing or preventing the secretion of bile, may produce genuine Jaundice. But if, on the other hand, nothing can be detected in healthy blood, which has any similitude to bile ; and if, it be merely a product of the blood, composed, and separated by the liver (which I believe to be the fact), such an opinion is utterly inadmissible.

Neither the yellow colour of the bile, nor its bitterness, is ever to be observed in the blood of a healthy person, and I can see no good reason for supposing, that it is disengaged from the blood in any other manner, than by some secret, and unintelligible process going on in the liver. The analogy of other secretions seems also to invalidate this notion—we do not find urine abounding in the blood of those who suffer from a suppression of that secretion—nor do we find the blood of castrated animals abounding with semen. The milk is probably a secreted fluid, and is to be observed in the female sex only—now if it existed in the blood formed, why should we not see it abound in the blood of the male, or that of the female, in the absence of lactation. The structure of the glands, destined to the separation of the secretions ; is so evidently similar that, I could as soon expect to obtain urine, or semen from the blood of a healthy animal by a chemical operation, as the bile : and surely the most enthusiastic theorist, will not for a moment think, that all the secretions exist formally in the blood. If such were the case, what an odd composition would this blood be. If the bile existed already formed

in the blood, the separation of it being interrupted by obstructions or other disorders of the liver, remaining with its impurities in the blood, at the same time that more is constantly generating; the circulation would soon be surcharged, and the whole animal fabric degenerate into a mass of bile. Besides, many variations of the liver, with respect to size, figure, &c. have been observed by anatomists in which the general health of the person so affected—was not in the least altered.

But, it has been declared, under the sanction of experiment, that bile exists formally in the blood. Mr. Fourcroy, we are told, gave, in the year ninety, a memoir in the *Annals of Chemistry* containing experiments, which were thought to prove the formal existence of bile in the blood. Far be it from me to say that it is so, but, I must think, that this ingenious experimentalist was mistaken. Not having been so fortunate as to see the memoir containing Mr. Fourcroy's experiments, I was induced to make several myself; and in no one instance was I able to detect any thing in the blood which had the smallest resemblance to bile.

Although, I cannot completely assent to this belief, I think it highly probable, that the constituent principles of the bile, may be present in such a state in the blood, as to render a separation of it possible, by certain changes in the circulation, without the instrumentality of the liver. This opinion receives some support, from the observations of many authors, which demonstrate, beyond a doubt, the existence of Jaundice, when the liver and its appendages, were in perfect health, which may be more satisfactorily accounted for, by such an hypothesis, than by imagining that the bile measures its way back again into the circulation. I allow, that in

many cases of dissection after death from this disease, many morbid phenomena have been observed in the liver; but, in such cases it had continued a great while, which, with other collateral considerations, seems to render it probable that the affection of the liver was the effect, and not the cause of the disease: moreover, I believe that diseases of the liver and obstructions of the biliary ducts, are often reciprocally dependant upon each other; an inflammation in the liver may give origin to obstruction in the ducts several ways; and who will be so precipitate or rash as to deny, the existence of hepatitis, and other diseases of the liver, arising from disorders in the biliary ducts.

Doctor Marcard, I observe, in the Edinburgh Medical Commentaries by doctor Duncan, some time ago broached an opinion entirely new; I wish I were warranted in adding, that it was as ingenious as new, but candour forbids the assertion. He undertakes to prove that secreted bile, in case of any stoppage in the ducts, transudes through the coats of the gall-bladder, into the cavity of the abdomen, and then enters the circulation, by absorption. The bile (he says) is of a very penetrating nature, and the gall-bladder, like every other membrane of the kind, is porous. In order to substantiate his theory, he adduces many facts from morbid dissections, where a considerable quantity of bile was found on the outside of the gall-bladder, which plainly appeared to have oozed through it—he also mentions, the case of a soldier wounded in the right side, who died on the 17th day after the accident, but, who was, previous to death, afflicted with a partial Jaundice---Upon dissection he was found to have a small wound in the fundus of the gall-bladder, through which the bile had passed into the cavity of the abdomen---This opinion, like the doctrine of Hippocrates with regard

to the circulation of the blood, is so extremely improbable in itself, that there are few at this time, who can be ignorant or superstitious enough to believe it—The gentleman undoubtedly mistakes the effect for the cause; for it is unquestionable, that when the disorder continues long, the whole body becomes coloured with biliary matter, internally as well as externally: and I well recollect to have assisted in the dissection of a woman during the last winter, whose liver, stomach, colon and other neighbouring parts, were deeply stained with biliary matter, which appeared to have transfused through the gall-bladder, biliary ducts and liver; but upon enquiry I found, that this person, was not observed to have any symptom of Jaundice, during the disease, which eventually put an end to her life. Now, admitting the facts adduced to corroborate this theory, is it presumable that the bile would transfuse through the substance of the gall-bladder, before it would be absorbed, or regurgitate into the blood? but two objections appear to me, to destroy this opinion.

1. Bile injected into the cavity of the abdomen in a living animal kills it in a very short time.
2. I am informed, that it is by no means uncommon, to see those yellow transfusions in persons who had not died of Jaundice; and the fluid which is continually exhaling into the abdominal cavity in the disease, is as likely to be coloured with bile, as the urine and saliva, without its having passed immediately from the gall-bladder, or any other part of the biliary system.

Among the causes which give rise to the disease, I shall take the liberty to introduce in the catalogue,

First—Inflammation—Hence it is we so often see Jaundice accompanying hepatitis or acute inflammation of the

the liver—This only happens, however, when the inflammation is extensive, and is by continuity or contiguity of parts propagated to the biliary ducts, whose coats, becoming swelled, and inflamed, close their cavities or diminish them so much, as to hinder the free passage of their contents, into the duodenum; but, that inflammation of the liver often occurs without the disease, is indisputable—besides an inflammation of the liver, it is possible enough that inflammation seated originally in the pancreas, duodenum and other adjacent parts, may spread so as to find its way into these ducts, and thus occasion the disease in question—I have heard of two cases, in which it was produced by a translocation of inflammation.

A second way, by which inflammation may act in producing Jaundice, is by affording inflammatory exudations, which promote an accretion of the ducts, and obliterate their cavities; or else serve as nuclei for subsequent biliary or calculous depositions, and thus give origin to one of the most common causes of obstruction—And it is likewise possible, that a concretion or coalescence, of the sides of the ducts may take place, from a long continued lateral pressure, inducing such a degree of inflammation in them, as to create an adhesion; in either case the ducts may be partially obstructed, or become totally impervious. It is extremely difficult to ascertain when such an accretion is the cause of obstruction, and what is more to be lamented, if we knew of its presence, we are in possession of no remedy which will remove it—Strictures, I am induced to believe, often remain in the ducts after inflammation, and give rise to cases of the most obstinate Jaundice—Inflammation sometimes, tho rarely, manifests itself in those parts in the form of excrescences, which annihilate the cavity of the ducts, or stretch them far beyond their ordinary size.

Secondly—Biliary calculi—These are, by far, the most common causes of the disease—they are called biliary, not because they always consist of bile, but because they are generally found in the liver and its appendages—The blood and almost every fluid secreted from it, by remaining stagnant in little masses, lose their subtile parts by absorption, and become thick and solid; hence it is, that stones, or (to speak more correctly) indurated concretions, are so often discovered in the body after death; and in no part of it does this happen so often, as in the liver, gall-bladder, and biliary ducts, owing, in all probability, to the languid circulation in the liver, to the particular nature of the bile and, in part, to the confinement to which it is occasionally exposed, in the gall-bladder and other parts of the hepatic system. Calculi are so commonly spoken of by physicians, and so often observed by anatomists, that to adduce examples, or quote authority, to prove their existence, would be superfluous and unnecessary.—They are in general inflammable, and will swim in water, but this is not invariably the case. They differ in firmness, from the consistence of honey to the most hard and compact stone; their size is only limited by the capacity of the gall-bladder or part in which they form, and they are found of every intermediate dimension between this and the smallest imaginable grain. In colour they vary, from that of a pale brown to an intense black; once in a while, they are found red, green, transparent, &c. Their form is not less variable: they are sometimes smooth and even, at others extremely rough and irregular. In number they vary, from one, actually, to many hundreds. Their composition is very different, at different times, and in different persons; most of them appear to be composed of the constituent principles of the bile; a few, of an osseous substance; many white, steatomatous, or cheesy in their appearance; others, again, appear fabulous, cretaceous, or

gritty, and often exhibit a calcareous fracture. It is not likely that bile alone is susceptible of this variety of appearance; we must, therefore, look to some other source, in order to account for their formation. They appear to me to be tributary, for their existence, to three principal sources.—1st, Inspissated or consolidated bile, indubitably composes the greatest number of them.—2dly, Effusions of blood or coagulable lymph, in consequence of inflammation, may contribute to their formation, by lodging in the biliary passages, and affording nuclei for the deposition of biliary matter—3dly, A morbid secretion—May we not from analogy conclude, that the liver, as well as other parts in a state of disease, may secrete a substance totally distinct from bile, which may, some how or other, give origin to calculous collections. To these a fourth cause has been added: viz. bile coagulated in the intestines, and indigestible substances of any kind, forced into the biliary duct from without: but any one acquainted with the anatomical structure of these parts, would have difficulty in admitting even the possibility of such an accident: if we recollect that the duct passes some distance between the muscular and villous coats of the duodenum before entering it, we should imagine, that the first irritation would excite a contraction of that intestine, and completely exclude the offending matter. It is easy to conceive, how calculi or any other obstruction in the biliary ducts may lay the foundation of schirrus, induration, tubercles, and the like, in the liver and all the viscera from which it receives its blood; for from an accumulation of bile in the branches of the hepatic duct, the circulation in the liver must be greatly interrupted, and congestion and inflammation in the abdominal viscera inevitably be the result.

The greatest number of calculi, seem to be generated in the gall-bladder, where they often lie concealed for a long time,

without any considerable inconvenience ; until by some impelling power, they are thrust into the ducts—This is an accident which often happens from some violent and sudden effort, such as vomiting, sneezing, a strong fit of coughing, or vehement exercise of any kind, driving the calculi, if there be any adapted to the orifice of the duct, suddenly into it, in which, except their transit be quick and easy, they are impacted and become the immediate causes of obstruction : This we conjecture to have been the case, when Jaundice has succeeded some immoderate exertion of the body.

It is difficult to ascertain when a calculus is the cause of Jaundice, the most common diagnostics, however, are the following---a pungent pain in the beginning of the disease, frequent chilly fits, and an incessant disposition to vomit---the pain which attends, may, in general, be distinguished from that which accompanies inflammation of the stomach and intestines, by the comparative slowness and natural state of the pulse---If the size of the calculus, be happily such, that the diameter of the duct will admit of its passing off, it is conveyed into the duodenum, a bilious diarrhoea supervenes, and it is discharged, to the eminent relief of the patient.

It sometimes happens, that an adhesion is produced by inflammation, and the stone discharged by suppuration directly into the stomach, colon, duodenum, or lungs, and the patient recovers ; and cases are related, of their having been discharged externally, through the integuments in the same way. When they burst into the abdomen the case is generally fatal.

We shall frequently observe symptoms indicative of calculus, when no yellowness is seen : this may happen, from a

stone being so situated in the duct, and of such form as not entirely to hinder the passage of bile. So shall we observe yellowness, without any symptom which would induce us to suspect a calculus in the ducts, from distension of the duodenum or inflammation of the duct entering it, occasioned by any irritating substance. In short, it may be said, that the signs of calculus are very equivocal and uncertain; and it is probable that many painful sensations, which persons are wont to refer to the lungs, stomach and other parts of the alimentary canal, will ultimately be found to have their seat in the liver or biliary ducts.

The disease by which physicians are most commonly deceived, is colic. People will sometimes be afflicted with a permanent colic: by the repeated administration of cathartic and anodyne medicines, they will appear cured; but the disease shortly recurs and may again be removed, by the same remedies:—thus they vibrate as it were, for months and sometimes years, between indefinite points of ease and pain, until the disease appears unmasked and in its own specific form, when the powers of the medical art are often insufficient to arrest or procrastinate its lethiferous career. These symptoms are easily explained, by supposing at the end of the common duct, a stone irritating the muscular coat of the duodenum, which, contracting violently, forces it back into the less irritable and contractile part of the duct and the paroxysm ceases, until, by the vis a tergo, the calculus is again pushed into the sensible extremity of the duct, when, the attack will be renewed:—thus one calculus may in some instances give rise to a dozen attacks of Jaundice, or an hundred paroxysms of the most distressing colic—in cases like these, we ought always to be upon our guard, to suspect hepatic disease, to prescribe and predict accordingly—when a calculus has become fixed in the duct, the case is

truly deplorable; but here it is consolation to know, that the disease is not perpetual, but alternately coming on, and receding in regular paroxysms. As soon as the gall-bladder and excretory ducts are distended with bile, parts contiguous being irritated by the distension, nausea and vomiting intervene, in consequence of which, these turgid vessels are compressed on all sides, and the bile not being able to pass through the ordinary road into the intestines, by the vehement pressure which it sustains, is driven back through the secretory canals, into the ramifications of the hepatic veins, by these it is conveyed with the blood into the cava and heart itself. In this way is the distended reservoir often disburdened of its contents: the acute pain, and vomiting cease for a while, and the patient is astonishingly relieved: but the formidable career is not yet ended; the yellowness will gradually disappear, and every thing appear to go on well, until the bile accumulates afresh, then, the destructive paroxysm commences again with unrelenting violence; thus, the miserable sufferer continues sometimes better, sometimes worse, through a long and tedious scene of distress, until impotent nature refuses to protract the deadly combat, and the patient falls a sacrifice to the complaint; or, the vigorous and reiterated efforts of the constitution, overcome the resistance, and accomplish the expulsion of the stone. It is almost incredible, what large stones will sometimes pass through the common duct:—from the dilated state of this duct, as observed on dissection, it would seem that stones several inches in circumference had passed through it.

—Doubts are entertained, whether a stone in the cystic duct, can produce Jaundice—If such an accident ever happens, as doctor Monroe supposes may, (*i. e.*) a stone be so placed in the duct, as to admit bile into the bladder, and not suffer it to return, it certainly can, but in no other way.

It has been doubted too, that obstruction in the hepatic duct, could produce the disease, but, there have been cases of Jaundice, from indurated and schirrous liver where the larger ducts could not have been affected, which will force us to admit it : and is it not probable that partial affections of the liver, by pressing on the branches of the hepatic duct, may sometimes induce those evanescent symptoms of Jaundice which are so often taken notice of—Yet, I believe, by far the most common seat of the obstruction, is just at the termination of the duct in the duodenum : this is incontrovertibly proven by dissections, and by the acute pain, attendant on the presence of gall-stones, which could arise only from the irritation at the intestine ; for, from the experiments of doctor Monroe and others it seems, that the ducts themselves possess no muscular coat, and but little sensibility or contractile power.

Thirdly—Spasm—acting so as to diminish, or cut off the communication, from the liver to the intestines—whether the biliary ducts have positively muscular fibres, and are capable of assuming an action of the spasmodic kind, I shall not take upon me, to assert, although, I am disposed to think, that what happens in cases of spasmodic Jaundice, may be well enough comprehended, by an acquaintance with the muscular structure of the duodenum, without adverting to the controversy about the muscularity of these ducts.

This cause of the disease is always to be suspected, when it occurs suddenly, without any preceding sign of indisposition ; when it affects persons subject to hysteria, hypochondriasis, and other spasmodic diseases ; or such as are under the influence of violent commotions of mind, and when the disease disappears, soon after the intermission of the spasm.

The effect of violent passions of the mind in giving origin to Jaundice, is demonstrated by frequent and repeated experience in the practice of medicine: nor will this surprise any one, in the least acquainted with the connection which subsists between the mind and body, and how powers affecting the brain and nerves, communicate their effects to every part of the system—Although these effects from the nature of their causes, elude the observation of our senses, still, they are so consentaneous to reason and analogy, that we are compelled to acknowledge them.

Fourthly—Inspissated mucus, or any viscid matter whatever, stuffing up or clogging the orifices of the excretory ducts in such a manner, as to prohibit the free and easy passage of bile into the duodenum—

We shall not be surprised to hear of such a thing happening in the biliary passages, when we remember, that, like the intestines, the gall-bladder and biliary ducts, have innumerable villous projections on their internal surfaces: nor shall we be more at a loss to understand, how the quantity and consistence of their mucus discharge may be so augmented, or changed, as to retard or hinder the egress of bile into the intestines—We shall be led to suspect this cause of Jaundice, from the remedies which prove most beneficial towards its removal; from the relaxed and debilitated habit of body, which is its usual companion, and from a predominance of tenacious phlegm, in the throat, stomach and bowels: hence the origin of the disease in infants, called by nurses the Yellow Gum, which almost always disappears, as soon as the mucus, with which their primæ viæ were engorged, is expelled from their bodies.

A retention of the meconium in infants gives rise to Jaundice, by mechanically shutting the entrance of the biliary duct into the duodenum, or inducing, by its quantity or acrimony, spasm in the intestines, and thereby preventing the admission of bile into them.

This yellowness in infants, is ascribed by some, to an absorption of the meconium itself—This may sometimes be the case, but that it does not uniformly happen, is evinced, by its frequently occurring with bilious diarrhœa.

It has been remarked, with great apparent confidence, that an increased crassitude or viscosity of the bile, cannot produce Jaundice, because (say the advocates of this opinion) if its consistence be such, as to prevent its passing through the excretory ducts, it is hard to conceive, how it should get through the inconceivably small orifices of the secretory or lymphatic vessels—I grant, that after the bile has become so inspissated in the gall-bladder and excretory ducts, as to render its exit into the duodenum difficult or impossible, it is not to be supposed, that it will return to the blood through the minute secretory tubes, which are probably as passive as the excretory ducts themselves. But whoever will allow himself time to recollect the facility, with which the absorbents take up the most firm and solid parts of the body, can find no difficulty in admitting, that a preternatural spissitude of the bile, may once in a while, give rise to the complaint; and it is in the highest degree probable, that the absorbents have some inherent action of their own, which enables them to perform their offices more completely, while excretory vessels are all passive in their operation—It has been urged, likewise, that circumstances in the history of the disease are repugnant to this opinion—The one upon which

most stress is laid, is, that the gall-bladder has been frequently found, after death, in a state of great distension from a collection of thick viscid bile, yet Jaundice had not been the consequence. To this objection, it is answer enough to say, that the gall-bladder has often been found distended, with more fluid bile, in which the disease did not precede death.

Fifthly—Tumours—especially of a schirrous nature, in the liver, pancreas and parts circumjacent, by their size or situation compressing the biliary ducts—Examples of Jaundice from this cause are taken notice of by all anatomical writers—In cases of swollen and indurated liver, the disease is not occasioned by a want of secretion, (for we are informed by very respectable authority, that the liver will continue to secrete bile in a very disordered state) but, by the diseased part, pressing upon the hepatic duct or some of its ramifications, while the rest of it is performing the business of secretion. This will be the case when the induration is seated in the concave part, or when the conglobate glands, inclosed in the capsula Glissonii, become enlarged.

Under this head may be considered, cases of Jaundice which occur during pregnancy, from the pressure of the uterus, or colon distended with indurated fæces; in which the disease goes off after delivery as soon as the parts are restored to their original and healthy state.

The disease is also likely to occur in costive habits, in which case, it must be produced by some of the large intestines pressing on the biliary ducts, or, (which is more probable) by an unusual quantity of bile being confined in the intestines and absorbed by the lacteal vessels.

That all the causes which have been enumerated can pro-

duce Jaundice, will appear evident to every one in the least conversant with anatomy; and that they have produced it, the dissections of Bonetus, Morgagni, and other equally distinguished anatomists, abundantly prove.

But what shall we say of that yellowness or Jaundice (if I am permitted to call it such) which is occasionally seen in the bilious fever of our country, and especially in that malignant form of it denominated yellow fever?—I acknowledge that, in my mind, there exists not a doubt on the subject—I am decidedly of opinion that it is owing to bile present in the blood.

This opinion I the more readily embrace. 1. Because it occurs in those diseases in which a redundance of bile is so common; 2. and during the seasons principally in which those diseases prevail; 3. because, we do not know, for certain, of any other way, by which this phenomenon could be produced—but any how, it is very certain, that these icteric phenomena present themselves, with copious discharges of bile from the stomach and intestines, a manifest proof, that the biliary ducts are pervious and clear of obstructions. It is by no means an uncommon thing, to find persons during the hot season, with high coloured urine and a sensible yellowness in the whites of the eyes, without general fever, but accompanied with bilious vomiting, or diarrhoea; and persons convalescing from an attack of ordinary intermitting, or remitting fever, sometimes meet us with unequivocal symptoms of Jaundice—It also occurs in a small degree in those complaints so common among us, called inward fevers, and particularly in persons much addicted to the use of ardent spirits. How it comes to pass, that the causes producing bilious fever, and the intemperate use of spirituous liquors, should act in such

a manner as to produce this immoderate secretion of bile, I shall not attempt to explain; but that they have some specific operation upon the liver, we have the most unexceptionable testimony to prove, or whence happens it that the liver is so uniformly affected in both cases?—I may here remark, that starving has produced Jaundice; it is explained thus; after the abstraction of nutrition, the blood continuing to move on by the powers of the circulation, is lost principally in the secretions and excretions; among the rest the biliary secretion continues, and by some provident effort of the constitution is often augmented; by which means the bile, passing in its usual course into the intestines, is taken up by the lacteal absorbents, and conveyed into the circulation, where, in consequence of the diminished quantity of blood, it becomes perceptible to the senses.

In addition to the more common causes which produce Jaundice, I must not forget to mention others which are more ambiguous in their operation. They are the bites of poisonous and rabid animals—Contagion—suppression of some customary evacuation—Repelled eruptions, wounds and fractures of the cranium, instances of all which are mentioned by medical writers—they may produce the disease by inducing spasm which is itself the cause of obstruction, or by some convulsive effort which takes place during the accident; forcing inspissated mucus or calculi from the gall-bladder, into the ductus communis choledochus—but, that neither of these causes could have induced it, in some instances, would appear; from the suddenness with which it came on, from its having occurred in persons not subject to spasmodic diseases and who had not been exposed to any of the causes which are generally thought to produce spasm; and admitting a spasmodic affection of the intestines had occurred, the quantity

of bile secreted in so short a space of time, could not have been sufficient to have contaminated the whole mass of blood. The only way then in which Jaundice can be produced by such causes, is, by some unaccountable change in the circulation, by which means, some of the constituent parts of the bile are disengaged, exhibiting either partial, or universal phenomena of Jaundice.

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Having taken a view of the causes which produce Jaundice, and their mode of operating, it will be no very difficult task, to give an explanation of the most common symptoms observable in the disease.

The sense of oppression, tightness, and weight, with the pain and anxiety felt about the epigastric region, generally depend upon congestion in the biliary organs, owing principally to an accumulation of bile in the gall-bladder and branches of the hepatic duct, which, pressing upon the ramifications of the blood-vessels, greatly impede the passage of the blood through the liver—An enlargement of the liver from a turgescence of its vessels, will account for congestion in the abdominal viscera, which were formerly in the habit of discharging their blood into the circulation, through the medium of the vena portarum—The powers of digestion and chylication languish, because they cannot exist in perfection without the aid of the bile; and the reason of the emaciation and debility, which is so universally experienced by icteric patients, must be, that the chyle which is formed in the intestines, is not of the usual quality, or is such, as is less calculated to convey proper nourishment to the body.

With regard to the torpor, inactivity and drowsiness or

disposition to sleep, which occurs in the disease, there is a division of sentiment. Some suppose these symptoms owing to the general affection of the stomach and bowels, and ascribe them to that wonderful sympathy, which subsists between the alimentary canal and every part of the system, observing, that the intestines become torpid from the absence of the natural stimulus of the bile, and that this torpor or lassitude is diffused by sympathy over the whole body. That symptoms of prostration, analogous to these, do occur in certain affections of the stomach and intestines cannot be denied; but in the disease under consideration, they certainly may be accounted for, upon more rational grounds.—I am disposed to believe, contrary to the assertions of most writers, that those variations in the animal functions, are owing, in most cases, to a deficiency in the quantity of blood sent to the brain—We are taught, that a certain and definite degree of tension in the vessels of the brain is indispensable to the due performance of its functions—We know that in Jaundice, sanguification must be diminished, in consequence of imperfect digestion; and is it not allowed on all hands, that compression below the heart, on the system of blood-vessels, will always have a tendency to induce plethora in the abdomen, thorax, and inferior extremities? for the veins being far more compressible than the arteries, the pressure induced on the latter must be much less considerable in its effects, than that which is sustained by the former: hence it is, that ascites, anasarca, and hydrothorax, are so often the consequences of visceral obstructions: Seeing then, that the quantity of blood sent to the brain, is less than its ordinary supply, we could not, with any degree of plausibility suppose, that these symptoms were the consequences of a compressed brain—And moreover, in Jaundice, respiration is always free and easy, which is never the case when the brain suffers

from compression; but the quantity of blood may be relatively increased in consequence of obstruction in the liver and an absence of biliary secretion, in which case, the brain, in common with the other parts of the body, may sustain injury from plethora.

The obtuse pain, is always the result of a distension of the gall-bladder and biliary ducts, from an accumulation of bile; the acute pain is generally the consequence of inflammation, whether it be considered the cause or the effect of the complaint; it may also be the consequence of a calculus, irritating by its magnitude, or lacerating by its roughness and irregularity—In Jaundice, occurring in paroxysms, the acute pain about the epigastric or right hypochondriac region, is oftener excited by violent efforts to vomit, than by any other cause, while the ingress of the bile into the duodenum being done away, the turgid gall-bladder is exposed to the most violent pressure: and here we see the reason that icteric patients oftentimes feel the most excruciating torture. At length the bile, by mechanical violence, is repelled into the blood, a temporary relaxation commences and continues, until congestion takes place anew, when the painful paroxysm recurs—This alternate accumulation and repulsion accounts for the periodical returns of Jaundice, in a very satisfactory manner: they occur as often as the necessary collection of bile is renewed after a complete obstruction of the duct; or as often as newly generated calculi, are successively impacted in the ducts, after the passage of others into the duodenum.

The nausea, and vomiting may either depend upon proximity of parts, in consequence of which irritation is communicated to the duodenum and stomach; or upon some connection existing between those parts, similar to that ob-

served, in affections of the kidneys and bladder, which is not well understood--Vomiting is always a troublesome symptom, but is a salutary effort of the œconomy, to relieve the liver and its excretories, of their unwelcome and oppressive load—The yellowness which appears in some one or every part of the body, as in the eyes, urine, skin, saliva, nails, &c. is owing to the limpid or serous part of the blood being tinged by the colouring matter of the bile---When the skin takes on that extraordinary dark yellow appearance, which in some cases tends to a livid colour, the disease is absurdly denominated black Jaundice. The proximity of the colour of the skin to that of a black in a few cases, has led some to suppose that there is something peculiar in its nature. Among the ancients there were some, who believed that it was owing, to some affection or alteration in the spleen—Others were satisfied with an idea, that it was owing to an absorption of black bile, secreted by the capsulæ atrabiliaræ: but these opinions totter, upon the most superficial examination; for, first of all, this black colour has frequently been observed to occur when the spleen has been in perfect health, and, on the other hand, it is now allowed, that no such fluid as that called by the ancients atrabilis, is prepared in the body. Others again there are, who suppose it owing to an organical consumption of the biliary system; but this supposition appears to be equally void of foundation: for it undoubtedly very often occurs, where the liver and excretory ducts have not been more affected than in ordinary cases of the disease—It is now generally believed, that there is nothing extraordinary in the disease called black Jaundice, as to its nature or with a view to its medical treatment; and that it depends entirely on a change in the colour of the bile, before or after absorption, from an inveterate duration of the disease; perhaps it may be influenced by some constitutional difference in the person affected.

The imperfect or depraved vision, must depend upon an alteration in the humours of the eye, from effusions of bile, diminishing their transparency and altering their consistence; of course, objects being viewed through a yellow or not perfectly transparent medium, have a yellow tinge, or are seen indistinctly—This depraved vision seldom occurs, but that it sometimes does, is unquestionably true; and when it does happen, can be owing to nothing but an extravasation of biliary matter in the humours, or between the coats of, the eye; which, although invisible to the eye of a beholder, may be so considerable, as to colour the rays of light in their course to the retina. The green appearance of blue objects in icteric people, is in all probability occasioned by some accidental combination of colours in the eye which I do not thoroughly comprehend—The bile present in the saliva imparts a bitter taste to it, and in consequence of this, every thing taken into the mouths of jaundiced persons, is supposed by them, to have a bitter taste; while, communicating its acrimony to the perspirable matter, it excites a prurient or itching sensation on the skin, which is more or less severe according to the greater or less acrimony of the bile; but whence it happens, that some are so much perplexed by this symptom, whilst others are perfectly exempt from it, is not easily conjectured. The rough, hard and irregular fæces, depend upon the absence of the mucilaginous qualities of the bile, which in a natural state of things, lubricates their surface, and diminishes their tendency to cohesion: their more putrid odour and white appearance, are brought about by the want of the colouring and antiseptic part of the bile.

Costiveness arises from a defect of bile, without which the intestines do not perform their ordinary peristaltic contraction; hence also arises, want of appetite, and loathing of food,

for without the bile the aliment continues longer than ordinary in the alimentary canal and digestion is impeded: hence arise heart-burn, hiccough, acid eructations and flatulency, all, from an absence of the antiseptic and other principles of the bile, which are the proper correctors of acescency. When by vomiting or any other cause, a calculus or other obstructing matter is expelled, a large quantity of bile rushes into the intestines, and is immediately succeeded by a bilious diarrhoea, which is always esteemed a harbinger of approaching health.

The fever which accompanies the other symptoms and often proves fatal to the patient, is either symptomatic of the inflammation in the liver and biliary ducts, or is occasioned by the stimulus of the bile upon the heart and arteries, which it excites into stronger and more frequent contractions. If Jaundice continues long (say some) the blood, from the great proportion of bile in it, degenerates into a thin watery fluid, which, by reason of its tenuity, transudes with ease through the exhalents into the cells of the cellular membrane, collects in the greater cavities of the body and gives origin to dropsies of the most incurable kind.—But although the blood has in a few instances been found dissolved and uncommonly thin, I think it more probable, that the hydropic effusions which occur in obstinate cases of Jaundice, are either the consequences of an impediment to the return of blood through the ascending cava, or of the symptomatic fever which accompanies the disease. The dyspnoea, stricture across the breast, palpitation of the heart, irregular or intermitting pulse and uneasiness or starting in sleep, are occasioned by a collection of water in the thorax diminishing its cavity and consequently compressing the heart and lungs.

## PROGNOSIS.

The termination of Jaundice is precarious, and the event will always be different, according to the nature of its cause, the violence of the symptoms, the age, constitution and other circumstances of the patient. If the disease hath come on suddenly in strong and vigorous constitutions, is recent and its symptoms mild, it is seldom of extensive duration, and the probability is generally in favour of a recovery. In cases, where the disease is imagined to originate from spasm, or from mucus plugging up the biliary passages, as indicated by the age, disposition or temperament of our patient, the prognosis is for the most part favourable. The lighter or paler the yellow colour of the skin, the more favourable in general will be the issue of the disease: the nearer it is approximated to black the greater is the danger to be apprehended.

Should bile be ejected by vomiting, and the stools continue nearly of their natural colour, if digestion goes on tolerably well, and the patient loses strength but slowly, we need not fear a fatal termination. A bilious diarrhoea is always favourable.

A Jaundice succeeding or accompanying a fever is an equivocal symptom; the sooner it occurs in the disease the more favourable; and the longer the duration of the fever which it succeeds, the more dangerous—When many and violent symptoms appear; the fæces are white and dry without indications of the presence of bile in the intestines; digestion slow and imperfect; the paroxysms of the disease frequent and painful; the alvine discharge copious or colliquative; the abdomen hard and tumified with great loss of strength and emaciation, the disease is in a fair way to end

mortally. If dropſy intervenes with dyspnoea, palpitation, vermicular and intermitting pulse, hectic fever, with thirst and anxiety, particularly when the patient is advanced in life or of an infirm constitution, the case is still more alarming.—When the symptoms are complicated and not well marked, we should give our prediction in ambiguous or evasive terms; for it will often happen that some of the most mild, and promising symptoms, will be combined with others, the most malignant and fatal; nevertheless, I believe, we may give ourselves a greater latitude than is generally allowed; for a long continued obstruction to the outlet of bile, has not such permanent ill effects, nor do they prevent the recovery of the patient after the obstruction is done away, so long as is generally imagined: and there are not wanting instances, where Jaundice has returned frequently for many years, in which the person enjoyed good health all the time, in the intervals of the attacks.

### CURE.

In this, unlike most other diseases, it is impossible to lay down any one general plan of treatment, which will be found to hold good indiscriminately.

The nature and power of the remedies to be used, will depend much upon the state of the symptoms, the cause of the disease, and the condition of the system.

If inflammation has given rise to it or there exists a full, hard or tense pulse, pain, heat, thirst and other symptoms of general fever—Blood-letting, and the antiphlogistic regimen, are to be had recourse to without hesitation or reserve. The times when it will be necessary to repeat the

operation, are only to be ascertained by an attention to the violence of the symptoms, and particularly, to the state of the pulse—Cathartics, emetics, and sudorifics should be used as auxiliaries to the lancet—Acidulated, diluent and demulcent drinks are of considerable utility and ought not to be omitted. The languor and debility accompanying Jaundice would seem to point out that evacuations were improper, but experience happily convinces us that the reverse of this is true; and it is by evacuations alone that we have an opportunity of subduing the symptoms; nor is the patient so much reduced by the effects of depletion, as by the continuance of the disease—Should the pain continue obstinately severe, after the judicious administration of the remedies just recommended, tepid emollient fomentations to the epigastrium, and the warm bath, with occasional opiate anodynes are admissible and proper. In some instances it may even be proper to use opium and the lancet in conjunction, as will be the case when, from a calculus or any other cause, inflammation exists in the ducts with a spasmodic constriction of parts in their vicinity.

When Jaundice arises from spasm, in persons subject to spasmodic diseases or in such as have been exposed to accidents, which have been known to produce in them symptoms of convulsion; opium, amber, vitriolic æther, asafoetida and other medicines designated by the epithet antispasmodic, will often give instantaneous relief—perhaps dashing cold water in large quantities upon the patient might have some good effect.

When the disease is suspected to depend on a superabundance of viscid mucus, or any other tenacious matter infarcting the excretory ducts, occurring in the phlegmatic tempera-

ment or during the period of infancy, saponaceous and diluent medicines with the occasional exhibition of purgatives and emetics and afterwards tonics, are all that will in general be necessary—But

If the obstruction depends upon gall-stones in the biliary ducts, the cure is much more difficult; though their expulsion is sometimes effected by the unassisted efforts of nature. It has been ascertained by melancholy experience, that biliary calculi yield much less to the articles denominated lithontriptics, than those which are generated in the urinary organs; it would however be right to give some of them a trial in every inveterate case.

The chief and most celebrated among the solvents for biliary calculi, are, the caustic alkali, soaps, saline solutions, strong mineral acids, oil of turpentine, decoctions of common grass, the juices of succulent plants and spirit of wine. Dr. Heberden positively declares, that in many experiments, instituted to discover solvents for biliary concretions, he was not so fortunate as to find any thing that would dissolve them. But admitting they were soluble in any of these substances out of the body, (which is asserted by some) it is plain that a direct application of them to calculi in the biliary passages is wholly impracticable, if in the intestines, they are soon voided by stool and render the interposition of medical assistance unnecessary; and when we reflect on the course such articles must take in the circulation, before arriving at the liver, in order to mix with and mediate the bile in such a manner, that it may act as a solvent on these calculi, the difficulty of introducing a sufficient quantity of them, is self evident. It is therefore extremely doubtful whether any real benefit has ever resulted from their exhi-

bition, except what might more justly be attributed to their deobstruent effects; by which, they, to a certain degree, compensate, for the absence of the bile, which they resemble in promoting digestion, and in preserving order and regularity in the bowels. As it is not likely that any thing taken into the body, will in the least facilitate the solution of gall-stones while they are in a situation to do harm to the constitution, our principal exertions ought to be directed to their expulsion. With this intention, the first indication should be, to induce, as far as with safety may be done, relaxation: In the next place having rendered the duct pervious by the stone, we should cause the patient to make some violent exertion of his own with a view to expel it. In order to bring on a proper degree of relaxation, no remedy seems better calculated, than venæsection; the quantity of blood to be taken, must be regulated by the age, constitution and situation of the patient, above all, by the exigencies of the case, and the state of the system; after bleeding, the patient may take mucilaginous and diluent drinks, have emollient and laxative enemata occasionally injected; and fomentations applied to the abdominal region. After these remedies have been used sometime, we should attempt the evacuation of the stone, by the repeated use of emetics and purgatives.—It is observed by several respectable practitioners, that after the operation of vomits in this disease, biliary concretions have often been found in the stools of their patients, and they may do essential service by discharging from the biliary passages a large quantity of viscid humour. If vomiting gives great pain it ought not to be repeated, but purges substituted in its place with the occasional use of anodynes—what would be the effect of subjecting the patient to the relaxing influence of a warm bath, while under the operation of an emetic? from its efficacy in the reduction of strangulated hernia, and in removing obsti-

nate constipation, might we not expect advantage from such a practice ?

If schirrous induration of the liver, or any part in the vicinity of the biliary ducts, hath given origin to the disease, danger is to be apprehended, and unless a long continued and regular course of mercury have an effect in relieving the symptoms, we may despair of effecting a cure ; for the discussion of indolent schirrous tumors is always difficult, and too often impossible—In the worst of cases, however, medicine is capable of affording relief, and it would be ungrateful in the extreme, to abandon our patients over to the arms of death, while there remains the smallest hope of a recovery—Palliatives must therefore be resorted to ; such as cordials and anodynes,—the mineral waters, fomentations and laxatives ; by the seasonable and judicious administration of which, we may often allay, or obviate some of the most distressing symptoms of the disease—The volatile alkali, cicuta, and æther, are said to have been instrumental in the cure of Jaundice from this cause ; and I think it not improbable that blood-letting, in particular constitutions or states of the system, might be practised with advantage.

If the retention of the meconium in children should at any time be the cause, by creating obstruction at the orifice of the common duct, the exhibition of some gently laxative medicine, will very soon check its progress, but Jaundice will sometimes continue in children, after the stomach and intestines are perfectly cleansed, perhaps owing to the viscosity which the unabsorbed bile acquires by stagnating in the biliary ducts.

On the cure of those icteritious symptoms occasioned by

the bites of venomous animals, fractures of the cranium, &c. I have nothing to say; the remedies here, as in all other cases, should be accommodated to the nature of the cause, and the state of the system.

In all cases it will be of the utmost consequence, to keep the bowels lax and regular; mercury though sometimes useful, should in ordinary cases be abstained from, unless it be given as a cathartic; and unripe fruits, as having a tendency to augment the secretion of bile, should be avoided: The diet of the patient should be nutritious, easy of digestion and such as is least disposed to become acedent; his repasts should be frequent, and in small quantities, with diluent and demulcent drinks; moderate exercise will be serviceable when he is in a state to bear it without fatigue or inconvenience—If, in the course of the disease, he should become much reduced and debilitated, the use of stimulating, tonic, or corroborative medicines, must be fled to without delay to support and invigorate the patient. It is of importance, to give some cathartic medicine with opium, to obviate its astringent effects upon the intestines. Blisters are sometimes used in the disease, but they rarely give permanent relief.

Specifics upon specifics for Jaundice, have a long time degraded the writings of medical practitioners: to name them only would be offering indignity and disgrace to the science which I profess—But in our times, since days of sounder philosophy have illuminated the world, and physicians have learned to take more expanded views of the human constitution, we have with pleasure beheld those children of imposture rapidly depreciating; and the time, I know, will yet arrive, when these impious boasts of ignorance and superstition, will be as much ridiculed and detested, as they were once venerated and adored.

Persons convalescing from Jaundice, or such as are liable to frequent returns of it, should be extremely vigilant, and religiously refrain from every species of intemperance—Exposure to the unwholesome exhalations of a polluted atmosphere, and the use of ardent spirits, ought to be studiously and abstemiously avoided—Many, from the nature of their employments and situations, are unavoidably exposed to various irregularities; others voluntarily plunge themselves into the most unnatural excesses: these gentlemen would do well to reflect, what foes they have to encounter, and the difficulty attending the re-establishment of health after once having lost it; indeed, from the combined effects of climate, situation and their own deleterious conduct, too much cannot be apprehended: and how wretched must be the existence of that being, who is constantly tortured by the pains of disease, and whose only moments of ease, are procured by the reiterated application of medicine. Health is doubtless the first and best of all temporal blessings, without it our choicest pleasures become odious and tiresome—the animal machine dwindles into puerile and enervated effeminacy—Honour and opulence become vague and insignificant titles, and life itself an unremitting scene of misery and distress. These are considerations, which ought to teach mankind the value of health, and make those who possess it, sedulously strive to cherish and preserve it.

- “ The first physicians by debauch were made,
- “ Excess began, and sloth sustains the trade:
- “ By chace our long-liv’d fathers earn’d their food,
- “ Toil strung their nerves, and purified their blood.”

*The reader is requested to correct the following*

# ERRATA.

In page 4, line 11, for these, read theses.

7, 17, for confist, read confists.

8, 14, for deodenum, read duodenum.

15, 23, for froms, read from.

18, 5, for directty, read directly.

21, 25, for instrumentatily, read instrumentality.

Idem, 1, for seperation, read separation.

29, 1, for truly, read truely.